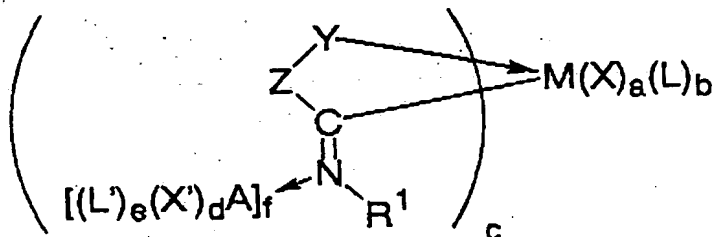
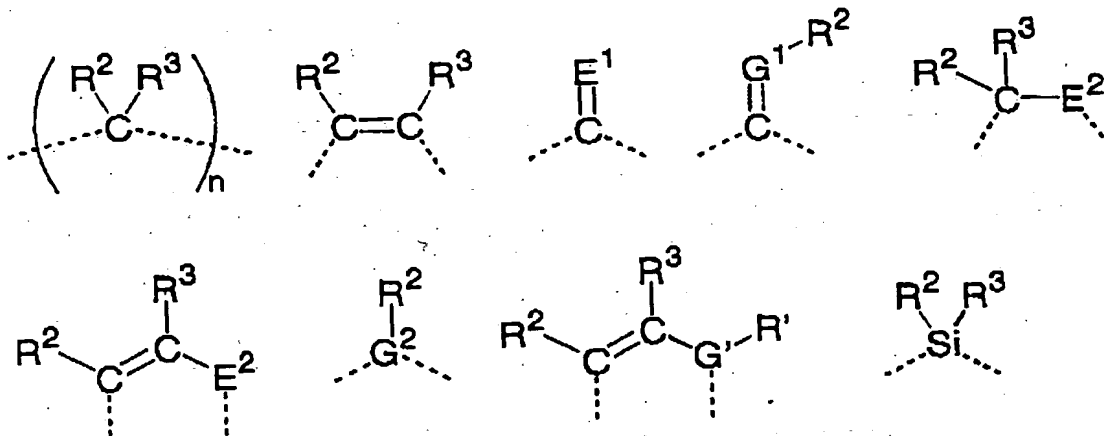


1. A transition metal compound represented by the following general formula (1):



Z represents a substituent selected from the group consisting of substituents represented by the following formulae (2):



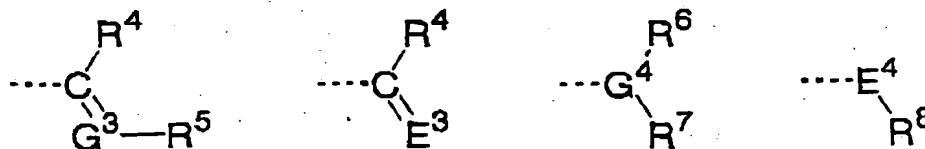
wherein R¹, R² and R³ independently represents a hydrogen atom, a hydrocarbon group having 1 to 20 carbon atoms, a substituted silyl group, a substituted amide group, a substituted alkoxy group, a substituted aryloxy group, or a hydrocarb n group

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Related Pending Application
 Related Case Serial No: 10/094799
 Related Case Filing Date: 03/12/02

containing a substituted silyl group, an atom of group 15 or group 16 of the periodic table or a halogen atom, R^1 , R^2 and R^3 may be the same or different, and two members selected from R^1 , R^2 and R^3 may be bonded together to form a ring, provided that at least two rings can be formed; E^1 and E^2 represent an atom of group 16 of the periodic table, G^1 , G^2 and G^3 represent an atom of group 15 of the periodic table, n is an integer of 0 to 2 provided that a case when n is 0 means that Y and the iminoacyl group in formula (1) are directly bonded to each other;

Y represents a substituent selected from the group consisting of substituents represented by the following formulae (3):



wherein R^4 , R^7 and R^8 independently represents a hydrogen atom, a hydrocarbon group having 1 to 20 carbon atoms, a substituted silyl group, a substituted amide group, a substituted alkoxy group, a substituted aryloxy group, or a hydrocarbon group containing a substituted silyl group, an atom of group 15 or group 16 of the periodic table or a halogen atom, R^5 represents a hydrogen atom, a hydrocarbon group having 1 to 30 carbon atoms, a substituted silyl group, a substituted amide group, a substituted alkoxy group, a substituted aryloxy group, or a hydrocarbon group containing a substituted silyl group, an atom of group 15 or group 16 of the periodic table or a halogen atom, R^6 represents a hydrocarbon group having 1 to 20 carbon atoms, a substituted silyl group, a substituted amide group, a substituted alkoxy group, a substituted aryloxy group, or a hydrocarbon group containing a substituted silyl group, an atom of group 15 or group 16 of the periodic table or a halogen atom, E^3 and E^4 represent an atom of group 16 of the periodic table, G^3 and G^4 represent an atom of group 15 of the periodic table, R^4 and R^5 may be bonded together to form a ring, and R^6 and R^7

may be bonded together to form a ring;

two members selected from R^1 , Z and Y may be bonded together to form a ring, provided that at least two rings can be formed;

A represents a transition metal atom of groups 3 to 11 of the periodic table or a typical element of groups 1, 2 and 11 to 16 of the periodic table;

X' represents a hydrogen atom, a hydrocarbon group having 1 to 20 carbon atoms, a substituted silyl group, a substituted amide group, a substituted alkoxy group, a substituted aryloxy group, a hydrocarbon group containing a substituted silyl group, or a hydrocarbon group containing an atom of group 15 or group 16 of the periodic table or a halogen atom, or X' is a halogen atom; and d is an integer of 0 to 6 and, when n is at least 2, X's may be the same or different;

L' is a coordinate bond-forming compound having a coordinating member selected from the group consisting of π electron, atoms of groups 14, 15 and 16 of the periodic table and halogen atoms, and e is an integer of 0 to 6 and, when e is at least 2, L's may be the same or different;

d is an oxidation number of the central metal A, and f is an integer of 0 or 1;

M represents a transition metal atom of groups 3 to 11 of the periodic table;

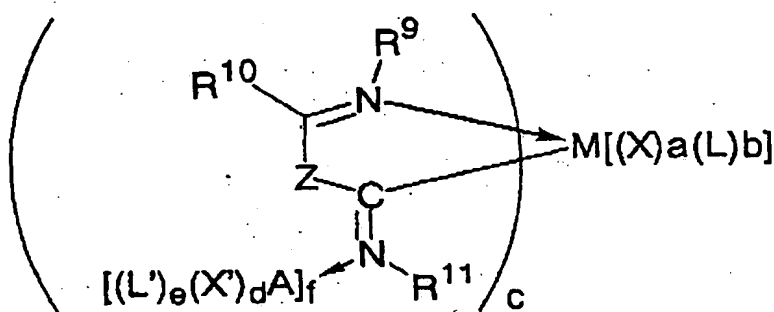
X represents a hydrogen atom, a hydrocarbon group having 1 to 20 carbon atoms, a substituted silyl group, a substituted amide group, a substituted alkoxy group, a substituted aryloxy group, a hydrocarbon group containing a substituted silyl group, or a hydrocarbon group containing an atom of group 15 or group 16 of the periodic table or a halogen atom, or X is a halogen atom; and a is an integer of 1 to 5 and, when a is at least 2, Xs may be the same or different;

L is a coordinate bond-forming compound having a coordinating member selected from the group consisting of π electron, atoms of groups 14, 15 and 16 of the periodic table and halogen atoms, and b is an integer of 0 to 6 and, when b is

at least 2, Ls may be the same or different; and X and L may be bonded to each other, L and R¹ may be bonded to each other, and L and Y may be bonded to each other; and

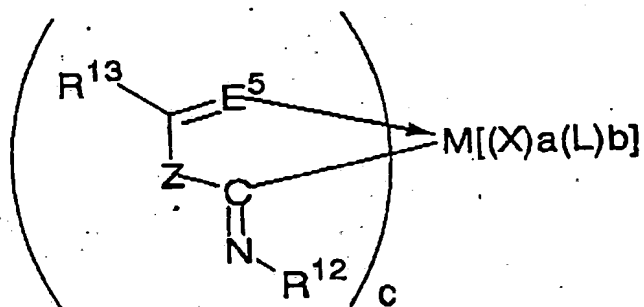
c is an integer of 1 to 5 and the sum of a + c is an oxidation number of the central metal M.

2. A transition metal compound represented by the following general formula (4):



wherein R⁹ and R¹¹ represent a hydrogen atom, a hydrocarbon group having 1 to 30 carbon atoms, a substituted silyl group, a substituted amide group, a substituted alkoxy group, a substituted aryloxy group, or a hydrocarbon group containing a substituted silyl group, an atom of group 15 or group 16 of the periodic table or a halogen atom; R¹⁰ represents a hydrogen atom, a hydrocarbon group having 1 to 20 carbon atoms, a substituted silyl group, a substituted amide group, a substituted alkoxy group, a substituted aryloxy group, or a hydrocarbon group containing a substituted silyl group, an atom of group 15 or group 16 of the periodic table or a halogen atom; Z, M, X, L, A, X', L', a, b, c, d, e and f are the same as Z, M, X, L, A, X', L', a, b, c, d, e and f, which are defined for formula (1); two members selected from R⁹, R¹⁰, R¹¹ and Z may be bonded to each other to form a ring, provided that at least two rings can be formed, X and L may be bonded to each other, L and R⁹ may be bonded to each other, and L and R¹¹ may be bonded to each other.

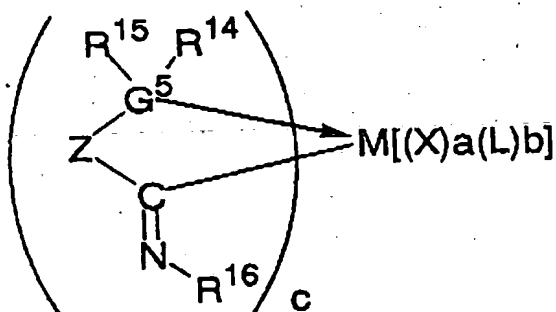
3. A transition metal compound represented by the following general formula (5):



wherein R^{12} represents a hydrogen atom, a hydrocarbon group having 1 to 30 carbon atoms, a substituted silyl group, a substituted amide group, a substituted alkoxy group, a substituted aryloxy group, or a hydrocarbon group containing a substituted silyl group, an atom of group 15 or group 16 of the periodic table or a halogen atom; R^{13} represents a hydrogen atom, a hydrocarbon group having 1 to 20 carbon atoms, a substituted silyl group, a substituted amide group, a substituted alkoxy group, a substituted aryloxy group, or a hydrocarbon group containing a substituted silyl group, an atom of group 15 or group 16 of the periodic table or a halogen atom;

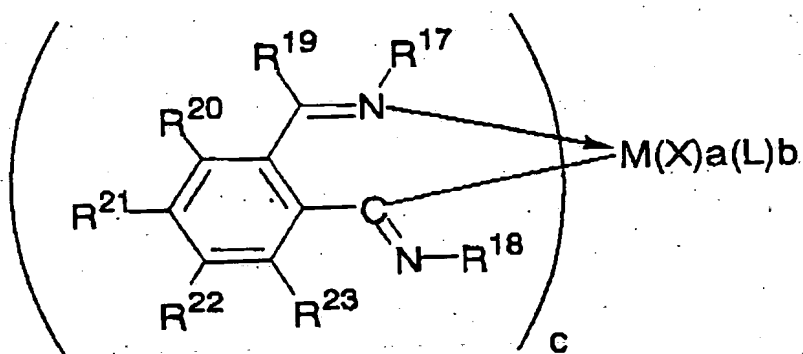
E^5 represents an atom of group 16 of the periodic table; Z, M, X, L, a, b and c are the same as Z, M, X, L, a, b and c, respectively, which are defined for formula (1); two members selected from R^{12} , R^{13} and Z may be bonded to each other to form a ring, provided that at least two rings can be formed; X and L may be bonded to each other, and L and R^{12} may be bonded to each other.

4. A transition metal compound represented by the following general formula (6):



wherein R^{14} and R^{15} represent a hydrogen atom, a hydrocarbon group having 1 to 20 carbon atoms, a substituted silyl group, a substituted amide group, a substituted alkoxy group, a substituted aryloxy group, or a hydrocarbon group containing a substituted silyl group, an atom of group 15 or group 16 of the periodic table or a halogen atom, R^{14} and R^{15} may be the same or different, and R^{14} and R^{15} may be bonded together to form a ring; R^{16} represents a hydrogen atom, a hydrocarbon group having 1 to 30 carbon atoms, a substituted silyl group, a substituted amide group, a substituted alkoxy group, a substituted aryloxy group, or a hydrocarbon group containing a substituted silyl group, an atom of group 15 or group 16 of the periodic table or a halogen atom; G^5 represents an atom of group 15 of the periodic table; Z , M , X , L , a , b and c are the same as Z , M , X , L , a , b and c , respectively, which are defined for formula (1); two members selected from R^{14} , R^{15} , R^{16} and Z may be bonded together to form a ring, provided that at least two rings can be formed; X and L may be bonded to each other, L and R^{14} may be bonded to each other, L and R^{15} may be bonded to each other, and L and R^{16} may be bonded to each other.

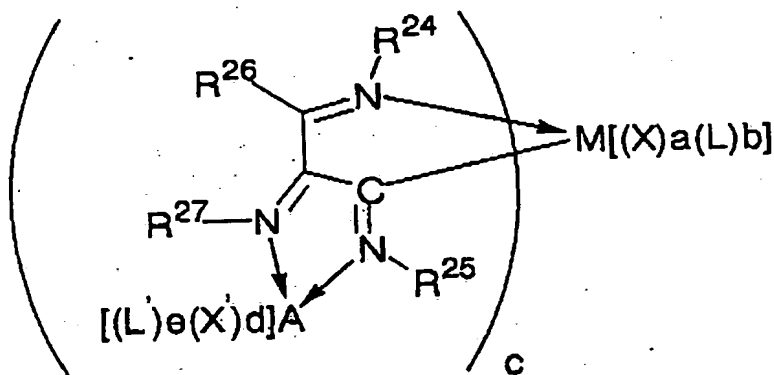
5. A transition metal compound represented by the following general formula (7):



wherein R^{17} and R^{18} represent a hydrogen atom, a hydrocarbon group having 1 to 30 carbon atoms, a substituted silyl group, a substituted amide group, a substituted alkoxy group, a substituted aryloxy group, or a hydrocarbon group containing a

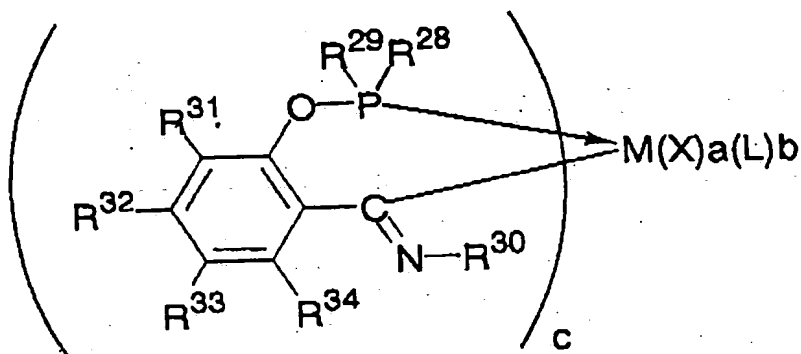
substituted silyl group, an atom of group 15 or group 16 of the periodic table or a halogen atom, and R^{17} and R^{18} may be the same or different; R^{19} through R^{23} represent a hydrogen atom, a halogen atom, a hydrocarbon group having 1 to 20 carbon atoms, a substituted silyl group, a substituted amide group, a substituted alkoxy group, a substituted aryloxy group, or a hydrocarbon group containing a substituted silyl group, an atom of group 15 or group 16 of the periodic table or a halogen atom, R^{19} through R^{23} may be the same or different, and two members selected from R^{17} through R^{23} may be bonded together to form a ring, provided that at least two rings can be formed; M, X, L, a, b and c are the same as M, X, L, a, b and c, respectively, which are defined for formula (1); and X and L may be bonded to each other, L and R^{17} may be bonded to each other, and L and R^{18} may be bonded to each other.

6. A transition metal compound represented by the following general formula (8):



wherein R^{24} through R^{27} represent a hydrogen atom, a hydrocarbon group having 1 to 30 carbon atoms, a substituted silyl group, a substituted amide group, a substituted alkoxy group, a substituted aryloxy group, or a hydrocarbon group containing a substituted silyl group, an atom of group 15 or group 16 of the periodic table or a halogen atom; and M, X, L, A, X', L', a, b, c, d and e are the same as M, X, L, A, X', L', a, b, c, d and e, respectively, which are defined for formula (1).

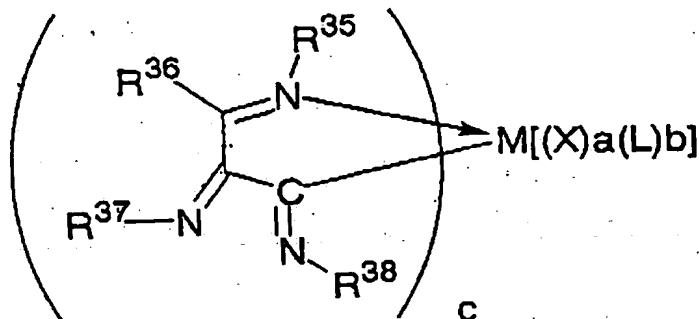
7. A transition metal compound represented by the following general formula (9):



wherein R^{28} , R^{29} and R^{31} through R^{34} represent a hydrogen atom, a hydrocarbon group having 1 to 20 carbon atoms, a substituted silyl group, a substituted amide group, a substituted alkoxy group, a substituted aryloxy group, or a substituent containing a substituted silyl group, an atom of group 15 or group 16 of the periodic table or a halogen atom; R^{30} represents a hydrogen atom, a hydrocarbon group having 1 to 30 carbon atoms, a substituted silyl group, a substituted amide group, a substituted alkoxy group, a substituted aryloxy group, or a hydrocarbon group containing a substituted silyl group, an atom of group 15 or group 16 of the periodic table or a halogen atom, M , X , L , a , b and c are the same as M , X , L , a , b and c , respectively, which are defined for formula (1); and X and L may be bonded to each other, L and R^{28} may be bonded to each other, L and R^{29} may be bonded to each other, and L and R^{30} may be bonded to each other.

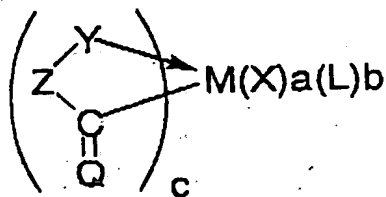
8. A catalyst for polymerization of an olefin, which comprises (A) a transition metal compound as claimed in any one of claims 1 to 7, and (B) an activating cocatalyst.

9. A catalyst for polymerization of an olefin, which comprises (A) a transition metal compound and (B) an activating cocatalyst; said transition metal compound (A) being represented by the following general formula (10):



wherein R^{35} through R^{38} represent a hydrogen atom, a hydrocarbon group having 1 to 30 carbon atoms, a substituted silyl group, a substituted amide group, a substituted alkoxy group, a substituted aryloxy group, or a hydrocarbon group containing a substituted silyl group, an atom of group 15 or group 16 of the periodic table or a halogen atom; and M, X, L, a, b and c are the same as M, X, L, a, b and c, respectively, which are defined for formula (1).

10. A catalyst for polymerization of an olefin, which comprises (A) a transition metal compound and (B) an activating cocatalyst; said transition metal compound (A) being represented by the following general formula (11):

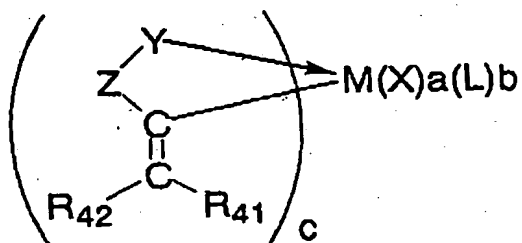


wherein Q represents an element of group 16 of the periodic table or $C(R^{39})(R^{40})$ wherein R^{39} and R^{40} represent a hydrogen atom, a hydrocarbon group having 1 to 20 carbon atoms, a substituted silyl group, a substituted amide group, a substituted alkoxy group, a substituted aryloxy group, or a hydrocarbon group containing a substituted silyl group, an atom of group 15 or group 16 of the periodic table or a halogen atom;

Z, Y, M, X, L, a, b and c are the same as Z, Y, M, X, L,

a, b and c, respectively, which are defined for formula (1); and two members selected from Q, Z and Y may be bonded together to form a ring, provided that at least two rings can be formed; X and L may be bonded to each other, and L and Y may be bonded to each other.

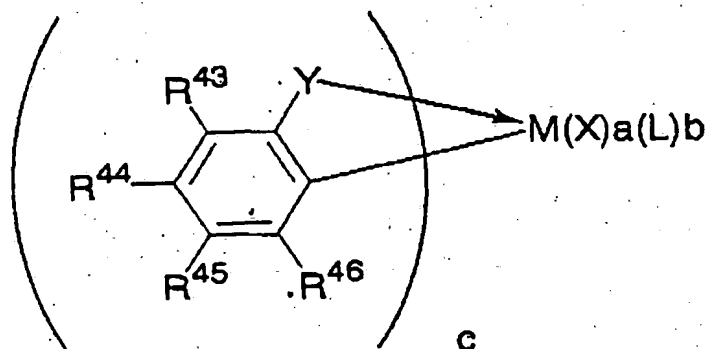
11. A catalyst for polymerization of an olefin, which comprises (A) a transition metal compound and (B) an activating cocatalyst; said transition metal compound (A) being represented by the following general formula (12):



wherein R^{41} and R^{42} represent a hydrogen atom, a hydrocarbon group having 1 to 20 carbon atoms, a substituted silyl group, a substituted amide group, a substituted alkoxy group, a substituted aryloxy group, or a hydrocarbon group containing a substituted silyl group, an atom of group 15 or group 16 of the periodic table or a halogen atom, and R^{41} and R^{42} may be the same or different;

Z, Y, M, X, L, a, b and c are the same as Z, Y, M, X, L, a, b and c, respectively, which are defined for formula (1); and two members selected from R^{41} , R^{42} , Z and Y may be bonded together to form a ring, provided that at least two rings can be formed; X and L may be bonded to each other, L and R^{41} may be bonded to each other, L and R^{42} may be bonded to each other, and L and Y may be bonded to each other.

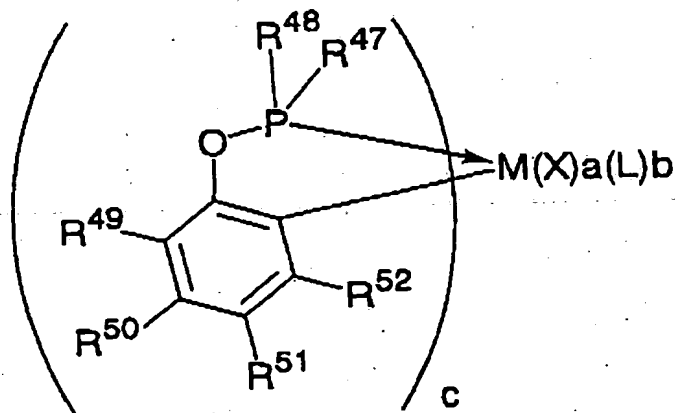
12. A catalyst for polymerization of an olefin, which comprises (A) a transition metal compound and (B) an activating cocatalyst; said transition metal compound (A) being represented by the following general formula (13):



wherein R^{43} through R^{46} represent a hydrogen atom, a hydrocarbon group having 1 to 20 carbon atoms, a substituted silyl group, a substituted amide group, a substituted alkoxy group, a substituted aryloxy group, a halogen atom, or a substituent containing an atom of group 15 or group 16 of the periodic table, and R^{43} through R^{46} may be the same or different;

Y , M , X , L , a , b and c are the same as Y , M , X , L , a , b and c , respectively, which are defined for formula (1); and two members selected from Y and R^{43} through R^{46} may be bonded together to form a ring, provided that at least two rings can be formed; X and L may be bonded to each other, L and R^{46} may be bonded to each other, and L and Y may be bonded to each other.

13. A catalyst for polymerization of an olefin, which comprises (A) a transition metal compound and (B) an activating cocatalyst; said transition metal compound (A) being represented by the following general formula (14):



wherein R^{47} through R^{52} represent a hydrogen atom, a hydrocarbon group having 1 to 20 carbon atoms, a substituted silyl group, a substituted amide group, a substituted alkoxy group, a substituted aryloxy group, a halogen atom, or a substituent containing an atom of group 15 or group 16 of the periodic table, and R^{47} through R^{52} may be the same or different;

M, X, L, a, b and c are the same as M, X, L, a, b and c, respectively, which are defined for formula (1); and two members selected from R^{47} through R^{52} may be bonded together to form a ring, provided that at least two rings can be formed; X and L may be bonded to each other, L and R^{47} may be bonded to each other, L and R^{48} may be bonded to each other, and L and R^{52} may be bonded to each other.

14. A catalyst for polymerization of an olefin, which comprises (A) a transition metal compound as claimed in any one of claims 1 to 7, (B) an activating cocatalyst, and (C) an organometallic compound.

15. A catalyst for polymerization of an olefin, which comprises a catalyst as claimed in any one of claims 9 to 13, and (C) an organometallic compound.

16. A process for polymerizing an olefin, which comprises polymerizing an olefin in the presence of a catalyst comprising (A) a transition metal compound as claimed in claim 1, and (B) an activating cocatalyst.

17. A process for polymerizing an olefin, which comprises polymerizing an olefin in the presence of a catalyst comprising (A) a transition metal compound as claimed in claim 1, (B) an activating cocatalyst, and (C) an organometallic compound.